

ABSTRACT OF THE DISCLOSURE

An engine is provided with a variable valve mechanism capable of changing a degree of an operating angle and a phase of a valve-open period of an intake valve. A controller selectively executes at least one of a plurality of knock controls including a phase adjustment of the valve-open period of the intake valve when a knocking is detected by a knock sensor. When the operating angle of the intake valve is smaller than 180 degrees, a knock control is selected and executed such that a valve-open timing IVO of the intake valve does not exceed a predetermined timing ($TDC + \alpha$) retarded from a top dead center TDC by a predetermined angle α . Specifically, for example, when the operating angle is smaller than 180 degrees and the valve-open timing IVO of the intake valve is after the top dead center TDC, the valve-open timing IVO is advanced.